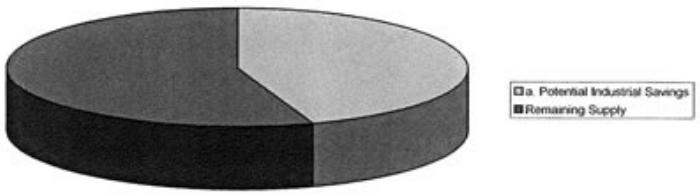
adopted new Building Standards in November of 2003. These standards will be applied to all projects seeking a building permit after October 2005. The technologies required by the new standards will reduce the use of electricity throughout the state by 2000-3000 GWh per year.

Efficiency measures must also be implemented on other uses of natural gas such as space and water heating and industrial processes. Below is an account of the substantial potential for natural gas and electricity savings in California's industrial, residential and commercial sectors.

Industrial Sector

A recent study conducted by the American Council for an Energy Efficient Economy ("ACEEE") shows that California can save a substantial amount of energy in its industrial sector. By increasing efficiency in such energy expenditures as space heating, water heating, refrigeration, lighting, ventilation, cooking and office equipment, industries can use 5.19% less natural gas and 5.41% less electricity within the next five years.[25] These estimates are based on already available technologies that have been proven to be cost effective.

Potential Natural Gas Savings in California's Industrial Sector Compared to Cabrillo Port Supply



Residential Sector

Additional measures need to be taken to increase energy efficiency in California homes. Over the next 5 years, by making energy-conscious decisions and using energy efficient technologies to heat water, heat space, ventilate and cook, Californians can use 5.1% less natural gas and 5.7% less electricity in their homes.[26]

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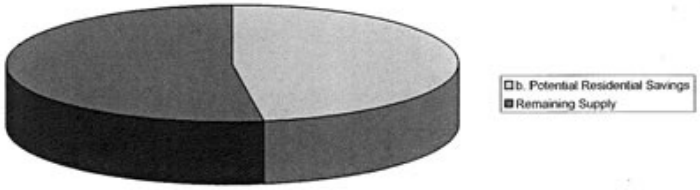
[25]/ Elliot, R. Neal et al., Natural Gas Price Effects of Energy Efficiency and Renewable Energy Practices and Policies, American Council for an Energy Efficient Economy, Report number E032, December 2003.
[26]/ Id.

Potential Natural Gas Savings in California's Residential Sector Compared to Cabrillo Port Supply

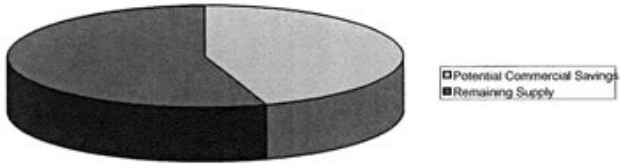


The CEC found that a total 11,593 GWh's of potential annual energy savings from existing residential buildings. The largest portion of this savings can be achieved through more efficient light fixtures and even natural lighting schemes.[27]

Commercial Sector

Similar to the residential sector, lighting holds the largest margin for improvement in the commercial sector. Refrigeration and space cooling also represent significantly large shares of the potential for energy efficiency savings from existing commercial buildings. The total potential annual savings is 6.8% of electricity and 4.8% of natural gas in California's Commercial Sector.

Potential Natural Gas Savings in California's Commercial Sector Compared to Cabrillo Port Supply



[27]/ Accessing the Energy Saving Potential in California's Existing Buildings, California Energy Commission.

Power Plant Efficiency

In addition to improving the downstream, or consumer, use of electricity, the state can also focus efforts on ameliorating the upstream, or production, inefficiencies in the electricity circuit. There is a huge margin for improvement in energy efficiency for California's electricity providers. 16,600 MW of electricity in California is currently generated at inefficient, steam producing power plants. These plants were built in the 1960's and 1970's and have high heat rates of at least 9000 BTU/kWh (high heat rates mean more system energy losses through heat dissipation). If California retrofitted just the older, non-peaking plants[28] with state of the art combined cycle gas turbines[29] (with low heat rates of about 7000 BTU/kWh[30]), the state could save 174 Billion cubic feet ("bcf") per year of natural gas.[31] This savings is equivalent to approximately 70% of the natural gas that the Cabrillo Port FSRU would supply to the California. Overall, if total U.S. electric efficiency went up by just 5% total U.S. gas demand would fall by 9%.[32]

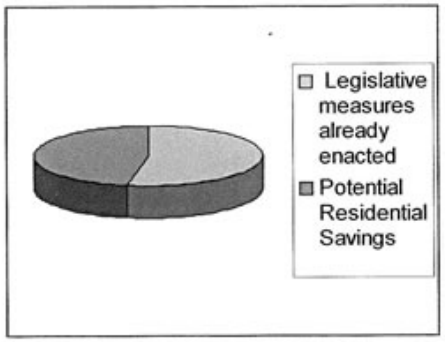
The DEIS/R should be revised to include these energy conservation measures. Combining the 5.19% savings in natural gas from the industrial sector, the 5.1% savings from the residential sector and the 4.8% savings from the commercial sector would result in a 15.1% savings of natural gas statewide through end-use efficiency. Adding increased power plant efficiency could result in even greater savings.

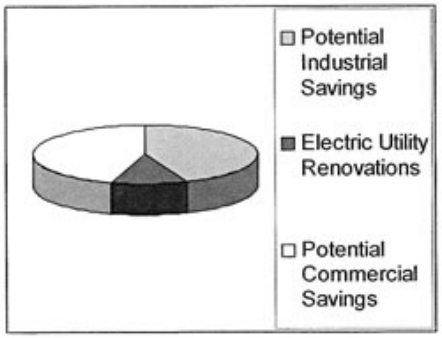
G437-38

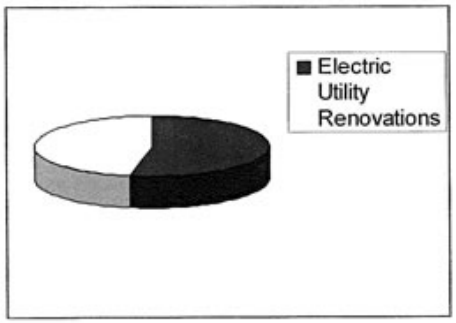
The figure below depicts this scenario. Imagine the volume of gas to be supplied by the Cabrillo Port Project is equal to one of the pies below. This figure illustrates that through a few basic energy efficiency and conservation measures, ***California can save two and a half times as much gas as Cabrillo Port would supply***.

[28]/ Non-peaking power plants provide electricity around the clock, as opposed to peaking power plants that are only in operation during the times of the day when the demand for electricity is the highest.
[29]/ Combined cycle gas turbines produce electricity up to 40% more efficiently than traditional steam powered generators.
[30]/ BTU/kWh: This is the ratio of how much heat energy (BTU) is required to produce 1 kilo-Watt hour of electricity.
[31]/ Comments of Synapse Energy Economics on the California Natural Gas Utilities' Phase 1 Proposals, prepared by Schlissel et al., Synapse Energy Economics, March 23, 2004.
[32]/ Lovins et al., Winning the Oil Endgame, Rocky Mountain Institute. Snowmass Colorado. 2004 (p. 113).

G437-38
Sections 1.2.2, 1.2.3, 1.2.4, 3.3.1, 3.3.2, 3.3.3 and 4.10.1.3 contain additional information on this topic. Also see response to Comment G437-2 and G437-13.







Grid Transmission

An expanded grid transmission system in the state would also increase energy throughput, including the potential for an increase in renewable generation. The Governor already approved the expansion Path 15 (which is the key line between northern and southern California). (See Exhibit 2.)

3.3.2 Renewable Energy Sources

As stated above, in section 1, realistic projections for increasing renewable energy sources in California can replace the need for one LNG terminal. Similar to energy conservation measures, many renewable energy sources can be deployed far more quickly than an LNG terminal can be approved and constructed. As an example, large wind power plants have been constructed within twelve months of approval. (Exhibit 1.) Wind generated power costs are now on a par with natural gas. (Exhibit 2.) Solar thermal, geothermal, and biomass are all potential sources of energy that can help meet the state's energy demand in a timely manner. (Id.)

See comments regarding section 1 above, for an assessment of the feasibility of increasing targets for renewables in the nation and in the state. California needs to increase the share of its

electricity generation that is supplied by non-hydro renewable resources. Solid waste landfill gas, wind, solar and geothermal can all be used to reduce California's dependence on fossil fuels to produce electricity. With proper investment over the next 5 years, California can almost double the amount of electricity it produces using renewable technologies, from 22.43 million MWh to 40.01 million MWh. This would make the total amount of renewable sources of electricity constitute 17% of all of California's electricity supply based on current demand. Coupled with energy efficiency technologies an even larger share of California's electricity could come from renewable sources.

In 2002 Governor Davis signed SB 1078, The Renewable Portfolio Standard ("RPS"), which requires an annual increase in renewable electricity generation equivalent to at least 1% of sales, with an aggregate goal of 20% of the state's electricity demand coming from renewable sources by 2017. The California Energy Commission advocates the acceleration of the RPS, which it believes can be met by 2010.[33] In fact, Southern California Edison already reports that purchases of renewable energy are already at 20%, proving it's feasible for other investor owned utilities to do the same. If the RPS were met in 2010 the resulting energy savings would be 1000-2000 GWh per year. When coupled with the affects of the 2005 Building Standard, the natural gas use at power plants can be reduced by 400 MMcf/d or more due to these measures.[34] That is equivalent to more than half of the natural gas the Cabrillo Port FSRU would potentially provide.

Construction of the Cabrillo Port project would make California more dependent on imported natural gas. Instead of focusing its efforts on increasing natural gas supply, California should increase energy efficiency measures and renewable energy sources. These actions are preferable because they would lessen the environmental effects of fossil fuel combustion such as air pollution and global warming. Additionally it is unwise for California to increasingly depend on an energy supply that is subject to price variability.

3.3.3 Northern Baja Mexico Terminals

The DEIS/R considers only one alternative location, Ventura Flats, which actually *increases* project impacts. This alternative should be deleted from the DEIS/R and replaced with alternative locations that would avoid or substantially lessen the project's impacts. G437-39

Remarkably, the DEIS/R fails to consider all of the alternative projects already under consideration or approved.[35] For example, the DEIS/R rejects the Northern Baja Mexico G437-40

[33]/ 2003 Integrated Energy Policy Report, California Energy Commission, December 2003. Docket No: 02-IEP-1. Pub No: 100-03-019. www.energy.gov/reports/100-03-019F.PDF
[34]/ Comments of Synapse Energy Economics on the California Natural Gas Utilities' Phase 1 Proposals, prepared by Schlissel et al., Synapse Energy Economics, March 23, 2004.
[35]/ Please note that by making this point, EDC and our client do not suggest that another location for an LNG terminal is the environmentally superior alternative; we continue to believe that an accurate analysis would demonstrate the energy efficiency and renewable energy sources are environmentally preferred. However, to fulfill the disclosure requirements of NEPA and CEQA, the impacts of the Cabrillo Port project should be compared to those of other similar proposed and pending projects.

G437-39
The "California Coastal Commission Final Report Offshore LNG Terminal Study"(Appendix E) concluded that "the most appropriate siting area for a liquefied natural gas (LNG) terminal off the shoreline of California appears to be in international waters of the southeast part of Ventura Flats" (see Appendix E). For this reason, this alternative was carried forward for further analysis. Upon review and analysis, it was determined that the Ventura Flats alternative location would result in more environmental impacts than the proposed location.

G437-40
Section 3.3.5 addresses this topic.

Section 3.3.5 has been revised to include updated information the proposed and permitted Baja LNG facilities. The infrastructure in the United States associated with the Shell/Sempra Energia Costa Azul facility currently under construction, which will export natural gas to the U.S., was not analyzed further in this document because it is evaluated by the FERC and the CSLC in a Joint EIS/EIR for the North Baja Expansion Project (FERC Docket No. PF05-14-000, SCH# 2006081127). Section 3.3.5 discusses Sempra's proposed expansion of its Costa Azul facility. To date, the expansion has not been permitted; therefore, it would be speculative to evaluate this portion of the project.

projects, even though at least one of the projects has already been approved. One of the Baja projects, which already has permits from the Mexican government, is rejected because of legal challenges. (DEIS/R, p. 3-7.) However, the Cabrillo Port project may also be subject to legal challenges, and yet it is still considered a viable proposal.

Baja projects are also rejected because they are located outside the jurisdiction of the USCG and MARAD, and because the United States would not have control over the distribution or quality of the LNG. (DEIS/R, pp. 3-7, 3-8.) However, as stated above, jurisdictional authority is not a basis for limiting the scope and range of alternatives in an EIS/R. Moreover, the State has already been working with Baja project proponents to negotiate a border crossing; these negotiations would need to address distribution and quality issues.

3.3.4 New or Expanded Pipeline Systems

As an alternative that would avoid reliance on foreign sources of gas (and the reliability concerns raised by such importation), the DEIS/R should evaluate the option of securing natural gas from within the United States, through the addition or expansion of interstate pipelines. As stated above, domestic and Canadian production is available, and California is not at the end of the pipeline as the DEIS/R states. G437-41

3.3.5 Regional Offshore Alternatives

A site offshore San Diego is rejected due to recreational impacts and proximity to shipping lanes. (DEIS/R, p. 3-11.) However, the proposed project would also result in recreational impacts and is located close to the coastwise shipping lanes. (DEIS/R, Figure ES-3.) G437-42

3.3.6 Specific California Locations

The 1978 Offshore LNG Terminal Study is referenced to support the rejection of locations that would be in water depths greater than 750 feet (DEIS/R, p. 3-12); however, the proposed project would be located in water depth of 2,900 feet. (DEIS/R, p. 2-2.) The DEIS/R should explain why this location in deep waters is acceptable. G437-43

Projects currently proposed at Long Beach and offshore on Platform Grace (near the proposed project site) are relegated to the Cumulative Impacts section, which makes no sense and fails to provide a comparative analysis to the proposed project. (DEIS/R, pp. 3-13, 3-19.) G437-44

In addition to these approved and pending proposals, other locations are rejected for reasons that apply to the proposed project as well. For example, some sites are rejected due to adverse weather conditions, when the proposed location is also subject to bad weather and sea conditions.[36] (DEIS/R, p. 3-12.) Some locations were rejected because they would be located G437-45

[36]/ See, for example, the statement in the California Coastal Commission's 1978 "*Final Report Evaluating and Ranking LNG Terminal Sites*" that delays in LNG tankering due to bad weather are "almost assured." (P. 62, incorporated herein by reference.)

G437-41
Section 3.3.4 contains additional information on this topic.

G437-42
Section 3.3.6 contains additional information on this topic.

G437-43
Section 3.3.7.2 contains additional information on this topic.

G437-44
Sections 3.3.7.3 and 3.3.8.1 contain additional information on this topic. Further, the document's treatment of the cited projects is consistent with the requirements of Section 15130 of the State CEQA Guidelines.

MARAD has not deemed an application complete for any project including Platform Grace. Although an application for the Clearwater Port project has been submitted to CSLC and USCG, the information is not publicly available. The information that is publicly available is insufficient to conduct a comparative environmental analysis.

G437-45
Sections 3.3.6 and 3.3.7 contain additional information concerning why these locations were not included as alternative locations.

within the Channel Islands National Park and National Marine Sanctuary. (DEIS/R, pp. 3-17, 3-18.) However, the National Marine Sanctuary boundaries may be expanded, in which case the proposed project would conflict with the purposes and regulations of the Sanctuary.[37] Even if the project is outside current Park and Sanctuary boundaries, it may still negatively impact resources of concern to both areas. G437-46

Before acting on any one LNG proposal, the State should update the 1978 onshore and offshore siting studies to provide a comprehensive, comparative analysis of the potential sites for an LNG import terminal. Of course, an LNG terminal should only be approved if other, environmentally preferred alternatives such as energy conservation and renewable energy sources are not feasible and capable of providing the state's energy needs.

3.3.8 Alternative Vaporizer Technologies

The DEIS/R Alternatives Section discounts the alternatives for vaporizer technologies (§3.3.8, p. 3-22). In particular, the report states that the two alternative technologies examined would, among other things, require more than 50 million gallons of seawater per day. This volume of seawater is described to flow through the vaporizers and return to the ocean at a "lower-than-ambient temperature," and could adversely affect sensitive marine resources. However, the DEIS/R does not adequately analyze the adverse affect on marine resources of the approximately 6.34 million gallons per day of seawater (264,200 gallons per hour) that will be used to cool the diesel generator. This may have similar (or worse) environmental impacts, and would also likely require similar filtration and chemical processing as would be contemplated for the vaporizer cooling water. What alternatives were considered for the engine cooling? What analysis lead to the judgments of significance between these similar uses of seawater? These questions need examination, and reveal the inadequacy of the alternatives section of the DEIS/R. G437-47

3.4 No-Action Alternative

The DEIS/R states that "If natural gas supplies continue to be constrained, then industrial power suppliers may be forced to rely on less expensive, but higher polluting energy sources such as coal, nuclear, or oil." (DEIS/R, p. 3-29.) As noted in great detail above, the state would be able to secure more energy from conservation and renewable sources than from the proposed project, without resorting to these other polluting energy sources. G437-48

3.4.2 Alternative Deepwater Port

[37]/ The CINMS Management Plan goals are resource protection, research, interpretation and visitor use. The existing Management Plan prohibits discharges and alteration of or construction on the seabed; in addition, the prohibition against hydrocarbons, although currently limited to exploration and development on oil and gas leases, may apply to any phase of hydrocarbon development if the Sanctuary boundaries are expanded. At the time of Sanctuary establishment, the only known threat was the potential for leasing and development within U.S. waters.

G437-46
The proposed FSRU would be remote from the Channel Islands National Park (see Figure ES-3). The closest Channel Island is 17.71 nautical miles (NM) (20.4 miles or 32.8 km) away from the proposed location of the FSRU.

The proposed location for the FSRU is 12.71 NM (14.6 miles or 23.6 km) away from the boundary of the Channel Islands National Marine Sanctuary (CINMS), and vessels associated with the operations would not be expected to enter the CINMS. Potential impacts on the marine environment are described throughout the Final EIS/EIR. Mitigation measures are included to reduce potential impacts.

According to CINMS staff, installation of the FSRU and pipeline at the proposed location would not automatically preclude the CINMS from including the Project area in the new Sanctuary boundaries; however, this would be considered by the CINMS when making a final decision (see Sections 4.13.2.2, 4.7.1.4, and 4.20.1.5).

G437-47
Section 3.3.9.4 addresses this topic. The Project has been modified since issuance of the March 2006 Revised Draft EIR. See Section 1.4.2 for a summary of Project changes. The previously proposed FSRU generator engine cooling system used seawater as the source of cooling water for the four generator engines. The Applicant now proposes using a closed tempered loop cooling system that circulates water from two of the eight submerged combustion vaporizers (SCVs) through the engine room and back to the SCVs, which reduces the seawater intake volume by about 60 percent. The seawater cooling system would remain in place to serve as a backup system during maintenance of the SCVs or when the inert gas generator is operating. Section 2.2.2.4 contains a description of the proposed uptakes and water uses for the FSRU. Appendix D5 describes seawater intakes and discharges during Project operations, and Appendix D6 describes the closed loop water system and provides thermal plume modeling analysis of the backup seawater cooling system.

G437-48
Section 3.4.1 contains additional information on this topic. Sections 1.2, 3.3.1, and 3.3.2 also address this comment. In addition, see reponse to Comment G437-13.

As stated above, the purpose of the alternatives analysis in an EIS/R is to identify and analyze options to *avoid or reduce* project impacts. The only alternative identified in this DEIS/R, the Ventura Flats alternative, would increase impacts. This alternative should be deleted and instead the scope of alternatives in the DEIS/R should be expanded to include options that would meet the objectives of the project while *reducing* impacts. G437-49

4.0 ENVIRONMENTAL ANALYSIS

4.1 INTRODUCTION TO ENVIRONMENTAL ANALYSIS

4.1.1 Baseline Conditions

The DEIS/R does not adequately describe the existing environmental setting or establish an environmental baseline. As discussed below in greater detail, sensitive species surveys and mapping were not undertaken and have been deferred to a later time. Thus, the DEIS/R fails to include essential information for evaluating the proposed action's environmental effects. G437-50

The DEIS/R further acknowledges that because a comprehensive botanical survey has not been conducted, "it is not known whether rare or special status plants along the proposed pipeline route are present." (DEIS/R, p. 4.8-36.) This survey information must be provided in the DEIS/R to enable a meaningful quantification and consideration of the proposed action's impacts, to allow design of appropriate mitigation measures and to allow comparison of alternatives. G437-51

The DEIS/R does not provide sufficient information regarding baseline environmental conditions, provides no studies of benthic infauna or epifauna that would be impacted by the proposed action, and includes no monitoring program to evaluate impacts on the marine environment and the effectiveness of mitigation measures. The DEIS/R states without support from any survey data that large numbers of birds and fish are not present at the FSRU site. Without any assessment or survey of larval abundance in the immediate area of the FSRU, the DEIS/R dismisses entrainment losses due to exchange of ballast water as insignificant. This is not appropriate given the relatively large volume of water that is to be exchanged daily (~14.5 MDG). The DEIS/R must provide sufficient survey data and information regarding ballast water intake velocities to allow consideration of potential entrainment impacts. G437-52 G437-53 G437-54 G437-55

In addition, the DEIS/R defers the analysis of wetland impacts to the ACOE permitting process without disclosing the scope of the proposed action's wetland impacts. G437-56

4.1.5 Future Decommissioning

The DEIS/R states that the impacts of decommissioning "will be addressed in a separate EIS/EIR closer to the time of decommissioning because it would be speculative to project all future potential impacts of decommissioning at this time." (DEIS/R, p. 4.1-3.) However, section 2.6 describes general decommissioning and abandonment activities. (DEIS/R, pp. 2-53, 2-54.) As stated above, all phases of the project must be analyzed in one DEIS/R to fully inform the G437-57

G437-49
See the response to Comment G437-39 concerning the "Ventura Flats" alternative. See Section 1.2.1 regarding the purpose of the alternatives analysis in an EIS/EIR.

G437-50
NEPA allows for incomplete information. In such cases, the agency must include (1) a statement that such information is incomplete or unavailable, (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment, (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

Section 15125(a), State CEQA Guidelines, states, in part, "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published..." The information in the document is consistent with this and other relevant provisions of the CEQA.

G437-51
See the response to Comment G437-30.

G437-52
Section 4.7.1.1 contains additional information on this topic.

G437-53
Section 4.7.4 contains additional information on this topic.

G437-54
Sections 4.7.1.2 and 4.7.1.6 discuss these topics.

G437-55
Appendix H1 and Section 4.7.1.3 contain additional information on this topic.

G437-56
The Applicant completed a wetland delineation identifying wetlands and waters of the United States along the Project pipeline rights-of-way and at the proposed metering stations. Section 4.8.4 addresses potential impacts on wetlands. Mitigation measures presented in Section 4.8.4 have been developed to avoid, minimize, or reduce impacts on wetlands and waters of the United States during construction activities. Tables 4.18-5 and 4.18-6 also

provide descriptions of the waterbodies, most of which are concrete flood control channels or agricultural drains, along the proposed pipelines and alternatives.

G437-57
The projected FSRU in-service life is a maximum of 40 years. Environmental conditions and specific impacts 40 years from now are not reasonably foreseeable. As noted in Section 2.8, supplemental NEPA/CEQA documentation, which would take into consideration the environmental conditions at the time, would be required prior to the decommissioning of the FSRU. Also as noted in Section 2.8, as part of the license approval, the DWPA requires each applicant to furnish a bond or demonstrate other proof that if the project is abandoned then sufficient monies would be available for either completion or demolition of the project.

decision-makers and the public about ***all*** of the potential impacts of the proposed project. Indeed, recent experience with the decommissioning of offshore oil and gas facilities reveals that these impacts can be significant and must be considered part of the overall project.

4.1.6 Mitigation Measures

The DEIS/R defers the formulation of mitigation measures for specific impact until after the record of decision, including mitigation measures for biological impacts and air quality impacts. For example, the Riparian Avoidance and Restoration provides no standards for determining when avoidance is feasible. Specific wetland mitigation measures are not provided. Additionally, alternative crossing methods for different waterways have not been determined and are being deferred to field decisions by SCE's construction engineers rather than being described in the DEIS/R so the public can comment meaningfully about the proposed action, its impacts, and proposed mitigation measures and alternatives. (DEIS/R, p. 4.8-44.) G437-58

As a result of this missing information, the decisionmakers and the public do not have sufficient information to evaluate whether the proposed action's environmental effects will be avoided or minimized.

4.1.7 Evaluation of Alternatives

See comments regarding Alternatives, above.

4.1.8 Underlying Assumptions

See comments above regarding the incomplete and inadequate Project Description. Please also see comments below regarding the inadequate identification and analysis of Mitigation Measures, and the fact that many such measures are deferred. In addition, compliance with all applicable laws and regulations does not necessarily mean that all impacts will be adequately mitigated.

Furthermore, the reliance on unidentified "supplemental submittals" defeats the purpose of providing full disclosure and environmental review up front, before decisions are made, and prevents the public from full participation in the environmental review process. G437-59

4.1.9 Environmental Setting: Offshore Oceanography and Meteorology

The proposed project would require the installation of a complex, risky regasification and storage facility several miles offshore, in an area known for rough seas and weather conditions. Even scarier, the project would require huge tankers carrying LNG to berth at the FSRU and unload highly flammable and explosive gas from the tankers onto the FSRU. This type of project does not exist anywhere else in the world, and to locate it in open ocean waters is a very dangerous proposal. G437-60

G437-58
Sections 4.8.1 and 4.8.4 have been updated with additional information and analysis. Section 2.7.2 discusses water body crossing methods.

G437-59
See the responses to Comments G437-30 and G437-50.

G437-60
Section 2.1 includes additional information on the Project overview and location. Section 4.1.8.2 provides information on weather conditions at the proposed Cabrillo Port site.

In determining baseline conditions, the DEIS/R relies on data from three weather buoys located near the proposed site to characterize the meteorological conditions of the proposed project site. These buoys include the Catalina Ridge buoy, the Santa Monica Bay Buoy, and the Point Dume buoy. These buoys are generally located to the north, east and south of the proposed project site. However, there is an additional buoy located west of the Proposed Project site from which no data was used to characterize the meteorological conditions at the Proposed Project site. Station 46503, owned and operated by the National Data Buoy Center, is located in the East Santa Barbara Channel approximately 25 miles west of the Proposed Project site. Meteorological conditions at Station 46503 are likely more extreme than conditions at the buoys utilized in the DEIS/R due to its location in the Santa Barbara Channel, where northwest winds frequently blow southeast from Point Conception directly towards the East Channel Buoy and the Proposed Project site. Accordingly, the DEIS/R should be revised to provide and analyze data from Station 46503 to help determine meteorological conditions at the Proposed Site. G437-61

The DEIS/R also states that the Applicant intends to design the FSRU and its mooring system based on 100-year wind/wave sea states. Is a 100-year wind/wave sea state sufficient for the Santa Barbara Channel? The Santa Barbara Channel can have very nasty surface conditions; the DEIS/R should disclose how often a 100-year event occurs, and how often larger events occur. What effect will a 500-year event have on the FSRU and what would be the consequences? G437-62

4.2 PUBLIC SAFETY: HAZARDS AND RISK ANALYSIS

The DEIS/R states in several instances throughout the Public Safety section that a conservative approach was taken to consequence modeling; however, closer inspection by independent and respected LNG safety experts Dr. Tom Spicer and Dr. James Fay reveals that there are critical flaws in the modeling methodology that has served only to underestimate the hazards posed by credible LNG spill scenarios. (See Exhibits 6 and 7.) G437-63

Dr. Tom Spicer of the University of Arkansas, one of the developers of FERC LNG consequence modeling, concluded that the modeling performed in the DEIS/R is inappropriate for an LNG application and inconsistent with 49 CFR 193. He recalculated the hazard zones in accordance with the FERC approved LNG spill modeling methodologies, summarized below. (See Exhibit 6.) His results and analysis, summarized and excerpted in the discussion below, reveal that the Applicant's proposed 2 NM Area to be avoided does not encompass the hazard distances posed by credible LNG spill scenarios. ***In fact, the correctly calculated vapor dispersion hazard distances from Worst Case Scenarios Nos. 1 and 2 are 9.4 km and 11.9 km respectively, compared to the 2.0 km and 1.8 km calculated in the DEIS/R.*** This analysis focuses on a scenario involving only one tank; a scenario involving two or three tanks could result in a greater hazard zone. While the FSRU is located several miles offshore, it is located only 3.7 km from the edge of the southbound shipping lane. ***Thus, the correct methodology reveals that the hazard zones run well into the shipping lanes, posing impacts that have not been analyzed in the DEIS/R as required by both CEQA and NEPA.*** G437-64

G437-61
Section 4.1.8 includes information about the selection of buoys that were used in the analysis.

G437-62
The regulations implementing the Deepwater Port Act (33 CFR 149.625 (a)) require that "each component, except for hoses, mooring lines, and aids to navigation buoys, must be designed to withstand at least the combined wind, wave, and current forces of the most severe storm that can be expected to occur at the deepwater port in any 100-year period."

By definition, a 100-year wave event is expected to occur once every 100 years on average over the course of many hundreds of years. The estimated 100-year wave height (7+ meters) and peak wave period (16+ seconds) at the FSRU exceed any waves generated locally by strong northwest winds. The most extreme waves are primarily generated in the deep ocean and propagate through the Channel Islands.

Final design of the FSRU and its mooring system must be approved by the U.S. Coast Guard before construction and installation.

G437-63
See the response to Comment 437-3.

G437-64
See the response to Comment 437-3.

Since the Cabrillo Port DEIS/R is the first environmental review document in the world to calculate and analyze various spill scenarios for an offshore LNG Port, the consequence modeling methodologies will set a precedent for future ports and must be done correctly.

Consequence Modeling Objectives and Assumptions[38]

Section 4.2 of the DEIS/R, Public Safety: Hazards and Risk Analysis, discusses thermal radiation and vapor dispersion hazards. This section summarizes assessment of the worst-case consequences associated with the proposed project and identifies objectives of the assessment process as (DEIS/R p. 4.2-1):

- identify and evaluate potential hazards;
- define scenarios to bracket the range of potential accidents (resulting either from operations or terrorist attacks);
- use state of the art computer models to define the consequences for each scenario (including the worst-case scenario);
- compare the results to existing safety thresholds and other criteria; and
- make the results available to decision makers and the public, while also ensuring that release of relevant information does not in turn create a security threat.

This process has been conducted on the basis of an Independent Risk Assessment involving a team of experts commissioned to prepare a site-specific evaluation of the project. The DEIS/R summarizes the results of the Independent Risk Assessment but concludes that it contains sensitive security information which cannot be made available to the general public. CCPN requests that Dr. Tom Spicer be permitted review of the Independent Risk Assessment.

G437-65

The DEIS/R bases its evaluation of the thermal and vapor dispersion hazards on several assumptions summarized in the report (page 4.2-19) including:

- High natural gas methane content.
- Wind profile is based on atmospheric stability class D.
- Wind speed at 33 feet (10 m) height above sea level is 13.4 mph (6 m/s)
- LNG is released instantaneously.
- Once spilled onto water, the LNG pool does not begin to evaporate "until the pool formed by a release has dispersed to a considerable distance. This assumption, coupled with the wind profile and speeds, is used to produce a conservative estimate (larger distance downwind potentially impacted by the release, which would be expected during a marine inversion) for horizontal dispersion of the LNG and the resulting natural gas cloud." (page 4.2-6)
- Each FSRU Moss storage tank contains 24 million gallons (91,000 m3) of LNG.

Other assumptions would have been made as part of the assessment process, but such

[38]/ See Exhibit 6.

G437-65
Appendix C1 contains the Independent Risk Assessment. See also response to Comment G437-3.

assumptions are apparently available only in the Independent Risk Assessment (such as the ambient humidity). In addition to these assumptions, the DEIS/R indicates the use of the Fire Dynamics Simulator (FDS) for the consequence estimates. Finally, the DEIS/R assigns a thermal radiation level (12.5 kW/m2) and a natural gas vapor concentration level (equal to the lower flammable limit, LFL, for methane of 5%). In assessing the thermal radiation hazard, the DEIS/R seems to assume that an ignition source will become available only after the natural gas cloud has reached its maximum extent to the 5% level. From this analysis, the DEIS/R reports distances for three cases:

- Worst-Case Credible Release #1 (WC #1). Release of 50,000 m3 LNG (one-half of one full tank) though a wall surface opening of 12.5%. The hazard distance was reported to be 2.0 km.
- Worst-Case Credible Release #2 (WC #2). Release of 100,000 m3 LNG (one full tank) though a wall surface opening of 20 m2. The hazard distance was reported to be 1.8 km.
- Terrorist Attack A (TA-A). Release of 300,000 m3 LNG (three full tanks) instantaneously. The hazard distance was reported to be 2.6 km.

For all of these scenarios, the DEIS/R indicates that the distances exceed the 500 m safety zone but are less than the Applicant's proposed 2 NM (3.7 km) designated Area to be Avoided. The DEIS/R significantly underestimates these hazard distances. G437-66

The analysis in the Draft EIS/EIR is based on a computer model which has not been verified or validated for this application. G437-67

Although the Fire Dynamics Simulator (FDS), the consequence modeling system used in the DEIS/R, is a sophisticated computer model which has been studied with regard to simulation of fires, its stated intended purposes include:

- Low speed transport of heat and combustion products from fire
- radiative and convective heat transfer between the gas and solid surfaces
- Pyrolysis
- Flame spread and fire growth
- Sprinkler and heat detector activation
- Sprinkler sprays and suppression by water

(page 6 of "Fire Dynamics Simulator (Version 4) Technical Reference Guide," NIST Special Publication 1018, Kevin McGrattan, editor.) ***However, FDS has not been verified for the purpose of predicting the dispersion of LNG vapor.*** G437-68 It is well established that denser-than-air gases such as LNG vapor behave according to different physical rules than are used in FDS. Furthermore, FDS has not been validated against the extensive available data pertaining to the dispersion of denser-than-air contaminants such as LNG vapor. G437-69

G437-66
See the response to Comment G437-3. Section 4.2.7.6 and the Independent Risk Assessment (Appendix C1) contain information on public safety impacts from various incidents at the FSRU. The analysis indicates that the maximum impact distance of an accident would involve a vapor cloud dispersion extending 6.3 nautical miles (7.3 miles) from the FSRU. The FSRU would be located approximately 12.01 nautical miles (13.83 miles) offshore; therefore, consequences of an accident involving LNG transport by carrier and storage on the FSRU would extend no closer than 5.7 nautical miles (6.5 miles) from the shoreline. Figure ES-1 depicts the consequence distances surrounding the FSRU location for worst credible events.

G437-67
The Independent Risk Assessment (IRA) has been updated since issuance of the October 2004 Draft EIS/EIR. The lead agencies directed preparation of the current IRA, and the U.S. Department of Energy's Sandia National Laboratories independently reviewed it, as discussed in Section 4.2 and Appendix C.

Section 4.2.7.6 and the IRA (Appendix C1) discuss the models and assumptions used and the verification process. Sandia National Laboratories (Appendix C2) concluded that the models used were appropriate and produced valid results.

G437-68
See the responses to Comments G437-3 and G437-67.

G437-69
See the responses to Comments G437-3 and G437-67.

The assumptions used to model the consequences in the Draft EIS/EIR are not conservative as presumed in the report.

Although the DEIS/R reassures the reader that the assumptions made in the hazard assessment are conservative, there is no documentation of this assertion. Furthermore, whether some of the assumptions are conservative or not may be based on the choice of the FDS to model the LNG vapor dispersion. According to Dr. Spicer, the following assumptions are questionable:

- Wind speed and atmospheric stability of 6 m/s and D stability give longer downwind distances that 2 m/s and F stability. This assertion would not be valid for models specified in federal regulations for determination of the vapor dispersion hazards of LNG.
- LNG does not evaporate as it spreads. In addition to this assumption being vague, it is physically impossible, computationally unnecessary, and very questionable as to whether it is even conservative in the sense used in the report.

In addition to these assumptions about the model inputs, the DEIS/R makes assumptions about the criteria used to determine the hazard distance which are inconsistent with other standards and regulations. The Executive Summary lists 49 CFR 193 as part of the "Key Elements and Thresholds" used in preparation of the report (page ES-15) and states that 49 CFR 193 "mandates compliance with American National Standards Institute/National Fire Protection Association (ANSI/NFPA) 59A, Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG)." For on-shore facilities, 49 CFR 193 and NFPA 59A require the determination of exclusion zones for thermal hazard distances be based on thermal radiation levels of 5 kW/m2. In a report prepared for the Federal Energy Regulatory Commission (FERC), ABS Consulting reports that the thermal radiation level of 5 kW/m2 would be expected to produce second degree burns after 30 s exposure and third-degree burns (1% fatality) after 50 s exposure. For on-shore facilities, 49 CFR 193 and NFPA 59A also require the determination of exclusion zones for vapor hazard distances be based in LNG vapor concentrations of 2.5% (LFL/2). ***Since the DEIS/R uses higher thermal radiation and concentration levels to determine the hazards, its consequence assessments are not conservative.***

More appropriate models are available to predict the thermal and vapor cloud hazards than were used in the Draft EIS/EIR.

There are models available which take into account the appropriate physical principles that govern the dispersion of denser-than-air gases such as LNG vapor and are referenced in 49 CFR 193 and NFPA 59A. Such modeling questions have been recently revisited by FERC. Under contract number FERC 04C40196, ABS Consulting summarized methods for determining thermal radiation and vapor dispersion hazards for LNG spills on water. The pertinent reports from this work are "Consequence Assessment Methods for Incidents Involving Releases from Liquefied Natural Gas Carriers" (dated 13 May 2004) and "Notice of Availability of Detailed Computations for the Consequence Assessment Methods for Incidents Involving Releases from Liquefied Natural Gas Carriers" (dated 29 June 2004) as part of FERC Docket No. AD-04-6-0000. Notwithstanding concerns about the validity of the meteorological conditions of 6 m/s and

G437-70

G437-71

G437-72

G437-73

G437-74

G437-70
See the responses to Comments G437-3 and G437-67.

G437-71
See the responses to Comments G437-3 and G437-67.

G437-72
See the responses to Comments G437-3 and G437-67.

G437-73
See the response to Comment G437-3.

G437-74
See the responses to Comments G437-3 and G437-67.

D stability as representing the worst case conditions. Dr. Spicer prepared estimates of the two worst case scenarios using the methods prescribed by the FERC report as summarized in the Table below (using the 6 m/s wind speed and D stability).

Worst-Case Credible Releases
Hazard Distances from FSRU

	Case #1 (1/2 tank)	Case #2 (1 tank)
Thermal radiation hazard distance	2.3 km	2.6 km
Vapor dispersion hazard distance	9.4 km	11.9 km

It is important to note that in a manner inconsistent with 49 CFR 193, the DEIS/R only calculates one hazard zone for each scenario. 49 CFR193 requires two calculations: a thermal radiation hazard distance, which assumes an ignition source near the release point; and a vapor dispersion hazard distance which assumes no ignition source exists near the source. These calculations ask two separate questions: if there is a fire at the release point, how far away is a safe distance (thermal radiation hazard)? If there is not a fire at the release point, how far downwind could a fire occur (vapor dispersion hazard)? Note that a fire can occur for (average) concentrations down to 2.5% methane.

G437-75

The calculations in the DEIS/R assume there is not a fire at the release point and then ask the question how far downwind will thermal radiation hazards exist if that "largest cloud" is ignited. The "largest cloud" is defined in the DEIS/R based on the maximum downwind extent of the 5% methane level, so the "largest cloud" does not go as far as the answer to the previous question of how far downwind could a fire occur. Thus, the DEIS/R improperly combined the hazard calculations using a modeling methodology that resulted in hazard zones that are actually underestimated, not conservative.

Additionally, according to Dr. James Fay, the possibility that the LNG spill could ignite at the location and time of the spill discharge, forming a pool fire, is not considered in the DEIS/R. Such pool fires could emit harmful thermal radiation to greater distances than the "release with subsequent ignition" spills. (See Exhibit 7.)

The properly calculated FERC hazard distances exceed the 500 m safety zone radius around the FSRU as well as the Applicant's proposed "Area to be Avoided" of 2 NM (3.7 km). Dr. Spicer did not make calculations for scenario TA-A because he did not believe that the instantaneous release of the contents of all three tanks while fully loaded is a credible event (also the position stated in the Draft EIS/EIR. He does believe, however, that the instantaneous release of the contents of two tanks while fully loaded should be considered because it will likely result in an even larger hazard zone. Such a scenario could occur because of a fire from either of the worst case scenarios discussed in the DEIS/R and should be calculated. If such a fire were to occur and not be controlled, the fire could compromise the insulation systems on the remaining two tanks

G437-75
See the responses to Comments G437-3, G437-67, and G437-73. NEPA does not require "worst-case analysis" but does require the agency to prepare a summary of existing relevant and credible scientific evidence and an evaluation of adverse impacts based on generally accepted scientific approaches or research methods. However, the Independent Risk Assessment (IRA) (Appendix C1) defines and evaluates representative worst credible cases (scenarios of events that would lead to the most serious potential impacts on public safety). These included accidents that would affect one, two, or all three tanks of the FSRU.

As shown in Tables 4.2-1, 4.2-2, 4.2-7, and 4.2-8, the release of the contents of all three tanks (the entire contents of the FSRU and an attending LNG carrier) is addressed in the escalation scenario associated with a large intentional event. Section 4.2.7.6 contains additional information on how intentional events are addressed. Although the 2006 U.S. Department of Energy's Sandia National Laboratories third-party technical review of the 2004 IRA found that the three-tank simultaneous release (a massive LNG release in a short time period) was not credible, Sandia recommended the consideration of a cascading (escalation) three-tank scenario.

thereby threatening their integrity. Such a potential hazard does not seem to be addressed in the DEIS/R.

Conclusion

In summary, the DEIS/R fails to meet the stated objectives in several very important ways with regard to thermal radiation and vapor dispersion hazards. Both Dr. Fay and Dr. Spicer agree that the consequence analysis in the DEIS/R is incomplete and technically flawed, and almost certainly underestimates the offshore safety hazard of LNG spills from the proposed FSRU project. When using the correct FERC modeling methodologies, the hazard zones for Worst Case Scenarios Nos. 1 and 2 (a ½ tank ignition and 1 full tank ignition, respectively) invade the shipping lanes and exceed the Applicant's Area to Be Avoided. In order to provide a meaningful safety analysis for the public to review and comment, the DEIS/R must recalculate the hazard zones utilizing the FERC approved LNG consequence modeling. The interference and increased hazard of an LNG spill encroaching upon the shipping lanes has not been analyzed in the DEIS/R. This critical gap in impact analysis requires the DEIS/R to be revised and recirculated in accordance with CEQA and NEPA. G437-76

4.3 MARINE TRAFFIC

The DEIS/R discusses several important implications of the proposed project for recreational, naval and commercial vessel traffic through the area, and presents mitigation measures to reduce some of those impacts. Unfortunately, the DEIS/R analysis of the project's full range of impacts on regional marine traffic remains far from complete. The DEIS/R (1) fails to detail or review major portions of vessel operations with significant likelihood of impact to regional shipping; (2) fails to consider the project's impact on all current patterns of vessel traffic through the area; and (3) understates the risks to regional marine traffic associated with mooring of the FSRU and associated LNG tanker traffic. G437-77 G437-78 G437-79

LNG Carrier Routing and Traffic

In its description of LNG carrier routing into the Southern California Bight region, the DEIS/R states:

> The FSRU would receive LNG carriers two to three times per week, weather permitting; therefore, there would be between 104 and 156 LNG carrier visits at the port annually. The applicant-proposed routing for LNG carriers approaching the FSRU is shown in Figure 4.3-2. The routes would transit in the vicinity of the SOCAL Training Range or through a small section of the Point Mugu Sea Range. The LNG carrier Master would select the approach and departure from the routes in accordance with Cabrillo Port's Marine Operations Manual, approach advice, instructions given by the FSRU's marine traffic controller, vessel traffic conditions at the time of arrival from ocean transit, Vessel Traffic Service ("VTS") information, and any regulatory navigation advisory notices or cognizant

G437-76
See the responses to Comments G437-3 and G437-67. In addition, public safety and marine traffic impacts have been updated in Section 4.2.7.6 and 4.3.4.

G437-77
Sections 4.3.1, 4.3.4, and 4.20.3.3 contain additional information on this topic.

G437-78
See the response to Comment G437-77.

G437-79
See the response to Comment G437-77.

> government authority directives affecting any of the available approach routes. (DEIS/R at p. 4.3-10, 4.3-11.)

The DEIS/R also states:

> LNG carriers would travel across the Pacific to the FSRU along one of two routes (see figure 4.3-2). Both routes avoid the VTS and the Santa Barbara Channel Traffic Separation Scheme ("TSS"). A maximum of 156 LNG carriers would dock annually at Cabrillo Port. This increase in marine traffic would not be significant since it is not anticipated that any transits would be in the TSS. (Id. at p. 4.3-27.)

These descriptions leave significant information unstated, and raise unanswered questions. First, why do routing descriptions on p. 4.3-27 only cover LNG carriers traveling "across the Pacific to the FSRU?" While the routing description of the first quote, from p. 4.3-11, states that carrier Masters would select "approach and departure" routes from the two illustrated options (Figure 4.3-2), the portrayal of carrier routing on p. 4.3-27 suggests that only LNG tankers inbound to the FSRU would travel the described routes.

This discrepancy, and general lack of information, raises several questions about LNG carrier traffic and the impact it will have on existing regional marine traffic, which the DEIS/R fails to answer. First, exactly what routing or routing options will outbound LNG tankers leaving the FSRU have? Will these ships also trace one of the two routes illustrated by the applicant (Figure 4.3-2)? If so, what measures are in place to ensure that outbound carriers do not present a collision hazard to full carriers inbound to the FSRU? The routes illustrated by the DEIS/R skirt several established naval exclusion zones as well as the TSS, leaving minimal room for avoidance maneuvering for LNG carriers inbound or outbound.

G437-80

G437-81

Clearly, the DEIS/R must provide significantly more information and clarification. If outbound LNG carriers may travel different, undocumented routes to exit the Southern California Bight, those routes must be detailed, especially if they involve travel in the Coastwise Lanes of the TSS. In the context of carriers traveling "across the Pacific to the FSRU," the DEIS/R states: "it is not anticipated that any transits would be in the TSS." It does not state whether transits *away* from the FSRU may involve use of the TSS, but leaves open this possibility in its ambiguous and incomplete descriptions. Cleary such use would have considerable impact on regional marine traffic, as LNG tankers entering, transiting and exiting the TSS would contribute to traffic volume, complexity of navigation, and collision hazard for other mariners.

G437-82

If the DEIS/R anticipates that outbound LNG carriers will travel the same routes as loaded inbound LNG carriers, anti-collision measures on those routes must be detailed. Furthermore, because any use of the TSS by LNG carriers is likely to have significant impacts on established marine traffic patterns, the DEIS/R must detail any scenario in which its tankers may in fact use the TSS lanes, and its precautionary measures in doing so.

G437-83

G437-80
LNG carriers approaching and departing the Cabrillo Port FSRU would travel on the routes depicted in Figure 4.3-2 (also see Section 4.3.1.3). LNG carriers would neither cross nor enter the Santa Barbara Channel coastwise traffic lanes under normal operating conditions. The FSRU would be located about 2 nautical miles from the southbound coastwise traffic lane. Given this distance, its presence, under normal operating conditions, would not interfere with operations in the coastwise traffic lanes.

LNG carriers and commercial vessels longer than 65 feet (20 m) would be equipped with an automatic identification system (AIS) so that they would be able to detect other LNG carriers and other vessels. Also, LNG carriers would be responsible for adhering to the "rules of the road" for ship traffic. Section 4.3.1.4 describes safety measures to be used.

G437-81
See the response to comment G437-80.

G437-82
See the response to comment G437-80.

G437-83
See the response to comment G437-80.

Use of Ports by LNG Carriers

The DEIS/R also fails to detail the anticipated use by LNG carriers of regional Ports, namely Los Angeles and Long Beach (LA/LB). Apparently only one indirect mention of port use exists in the DEIS/R— Marine Traffic Mitigation Measure (MM MT-7c)— which states: "There shall be coordination between the Applicant's designee at the FSRU and the USCG Captain of the Ports of Los Angeles and Long Beach to identify appropriate 'emergency anchorage." (Id. at p. 4.3-19.) First, there is no discussion of the impacts to marine traffic in the event that an LNG carrier must make "emergency anchorage" in the area, despite the potential for significant impact (as characterized by the DEIS/R's criteria) to other vessels underway or in port. Second, the DEIS/R does not explicitly mention or discuss whether inbound or outbound LNG carriers will, under non-emergency circumstances, make use of the ports of LA/LB. Such use does not seem implausible, and would not occur without impacts from increased traffic congestion in and around the ports. For a complete impact analysis the DEIS/R must detail its anticipated use of these ports by LNG carriers. Will porting of carrier ships occur only in emergency situations, or will there be regular porting by unloaded tankers for maintenance or fuel, before returning across the Pacific? Regardless of the extent of usage of the ports of LA/LB, the DEIS/R must outline its measures to mitigate the impacts to the marine traffic transiting to and from these economically critical areas. Without such discussion the DEIS/R remains deficient.

G437-84

Service Vessel and Pipeline Construction Traffic

In addition to unmitigated impacts from LNG carrier traffic, the proposed FSRU, service vessel traffic, and pipeline construction will also have impacts that, as presented, are understated and unmitigated.

First, the moored FSRU and the proposed 500m "safety zone" around the FSRU represent unmitigated impacts to recreational vessels, especially those traveling between the Northern Channel Islands and marinas in the LA area and along the Gulf of Santa Catalina. The DEIS/R acknowledges that boaters use the proposed target area extensively, stating:

> Numerous recreational vessels commonly frequent the 12-NM area surrounding the FSRU and the pipeline, especially those en route to various islands ion the Channel Islands National Park… An estimated 190 recreational boats and commercial fishing vessels could be located within 12 NM of the Project and any one time. (Id. at p. 4.3-4.)

G437-85

Clearly this is a significant number of vessels, and while they may be distributed over a 12-NM area, the addition of the FSRU, its surrounding exclusionary "safety zone," service boats patrolling around the FSRU, and inbound or outbound LNG carriers (with 500-1000 yard exclusion zones of their own (Id. at p. 4.3-27)) to the current vessel traffic paradigm in the area represents a considerable contribution to the area's navigational complexity. For example, recreational boaters with a west/northwest heading may find themselves deflected dangerously close to oncoming southbound commercial vessel traffic in the TSS should they chose to steer

G437-84
Section 4.3.1 contains additional information on this topic.

G437-85
Section 2.2.4 discusses the offshore safety zone, which under Federal law is an area to which access is limited to authorized persons, vehicles, or vessels. As discussed in Section 4.3.1.1, no fishing grounds are located in the proposed 1,640-foot (500 m) safety zone around the FSRU, which is in deep water, thereby limiting fishing activities. As discussed in Impact MT-2 in Section 4.3.4, security zones only apply to LNG carriers in Federal waters (within 12 NM from shore). Since Project LNG carriers would not have security zones, cargo vessels would have to observe the "rules of the road" when transiting near an LNG carrier, the same measures they would take when transiting near any large commercial vessel. Impact SOCIO-1 in Section 4.16.4 contains information on the potential decrease in catch revenues for commercial fisheries due to exclusion from fishing areas. Impact REC-2 in Section 4.15.4 contains information on restricted recreational fishing in the Area to Be Avoided.

The safety zone would extend in a circle a maximum of 500 meters from the stern of the FSRU. The area to be avoided (ATBA) would surround the safety zone, but would not extend as far as the coastwise traffic lanes (see Figure 4.3-4 and Sections 2.2.4 and 4.3.1.4).

Section 4.3.1.4 states, "The ATBA is considered by the USCG to be a recommendatory routing measure. Mariners could choose whether to avoid this area. Mariners would not be penalized for entering this area, nor would any action be taken to require them to leave the area. A vessel transiting the ATBA would be requested to restrict its speed to no more than 10 knots (19 km/hour) and to check in and out with the Cabrillo Port vessel operations manager. Both the speed limit restriction and contact with the Cabrillo Port vessel operations manager would be voluntary actions by mariners in vessels transiting the ATBA." Therefore, vessel traffic in the traffic lanes would not be affected by the safety zone or the ATBA (see Section 4.3.4). The safety zone could not be made any larger because its size is governed by international law.

north of the FSRU safety zone, representing a significant hazard. Unfortunately, later in the report the DEIS/R seems to ignore this acknowledgement of marine traffic and offer little impact mitigation to recreational boaters. Instead, the DEIS/R states, rather vaguely, and without cited evidence (contradicting the DEIS/R's own earlier data), that "Most recreational boaters travel to the Northern Channel Islands and therefore are not likely to transit in the vicinity of the FSRU." (Id. at p. 4.3-25.)

Clearly the DEIS/R must offer significantly more consideration to this issue in it its impact analysis and impact mitigation scheme. At present, the draft EIS/EIR lacks clarity on this issue, compromising human safety and property for commercial mariners and recreational boaters. In addition, the DEIS/R must consider impacts based on an accurate assessment of the hazard zone (see comments re: Public Safety: Hazards and Risk Assessment).

Finally, the DEIS/R's review of potential impacts to marine traffic due to supply/crew vessel transits from Port Hueneme to the FSRU remains incomplete. G437-86

According to the DEIS/R, "supply/crew vessels would make a maximum of 22 transits weekly." (Id. at p. 4.3-28.) These transits would "more than double the current traffic at Port Hueneme, resulting in a potentially significant impact on the port" (Id. at p. 4.3-27). The applicant claims that the impact to the port may not be adverse because of increased revenues for the port, and cites the port's director of marine operations' claim that "Cabrillo Port Project vessels would not impact commercial or fishing vessels that use the port" (Id.). Because of finite vessel capacity at the port, this claim may be arguable. Rather than merely relying on the opinion of the port's employee (who may have an interest in the increased revenues promised by FSRU vessel traffic), the DEIS/R should solicit the opinions of fishers and other commercial users of Port Hueneme as to whether they foresee any impact on their day-to-day operations from a doubling of current vessel traffic volume. Consideration of any concerns and ideas for mitigation of adverse impacts may prove extremely valuable for the access and safety of all users of the port.

The DEIS/R also fails to properly consider the potential impact of supply/crew vessel transits on commercial vessel traffic in the lanes of the TSS. The DEIS/R proposed "one to three vessel roundtrips… to and from the FSRU daily" implies two to six crossings of each lane of the TSS daily. (Id.) Though the DEIS/R states that these crossings are "not likely to disturb existing vessel traffic because transit would occur over a full working day," the risk of collision with a commercial vessel always exists when crossing the TSS shipping lanes. " (Id.) Large ships underway are unable to make short-range avoidance maneuvers to prevent collisions with unforeseen obstacles, and though safe seamanship by the Cabrillo Port's supply/crew vessel captains will surely be encouraged, numerous human or mechanical factors could result in a collision with a large commercial ship. For the DEIS/R analysis to be complete, the impacts to marine traffic in the case of such an accident must be reviewed, and precautionary measures to prevent such accidents detailed. As stated in the DEIS/R, the daily crew/vessel transits to and from Port Hueneme represent at least a doubling of vessel traffic in the area; the addition of this quantity of vessel traffic transiting the TSS represents a significant contribution to the complexity of navigation through the area by all mariners. (Id.)

G437-86
Sections 4.3.1 and 4.3.4 contain information on vessel traffic between the FSRU and Port Hueneme. The Applicant has updated its projections of vessel traffic between Port Hueneme and the FSRU. Projected weekly vessel transits have been reduced. Table 4.3-3 has been updated with these revised projections. Impact MT-2 in Section 4.3.4 contains the revised analysis of potential impacts on maritime traffic.

Moreover, the DEIS/R fails to account for the expected 10% *annual* increase in containership traffic in the TSS through the Santa Barbara Channel over the next 10 years.[39] This increase in traffic will result in a doubling by the year 2014. The DEIS/R is therefore obligated to critically review its impact on regional marine traffic, particularly for the safety of its own crews, and include the potential for accidents and other adverse scenarios, rather than stating without analysis that disturbance "is not likely" (Id.) G437-87

4.4 AESTHETICS

4.4.4 Impact Analysis and Mitigation

The DEIS/R contains inconsistent information regarding the distance of the FSRU from various sensitive visual receptors. For example, Table 4.4-2 states that the Mandalay Shores location is 19 miles from the proposed FSRU site, while the Oxnard Shores Mobile Home Park (at the far north end of Mandalay Shores, further away from the site) is described as being 17 miles from the site. These distances are inconsistent. The text on p. 4.4-10, meanwhile, states that the site is 17 to 23 miles from Hollywood Beach, Mandalay Beach, Ormond Beach, Silver Strand beach, and Port Hueneme Beach. Mandalay Beach, however, which runs immediately adjacent to the Mandalay Shores community) is the most distant of these 5 beaches from the FSRU site; the 23-mile figure is thus inconsistent with Table 4.4-2. Finally, the DEIS/R states (p. 4.4-15) that the distance to the site from Mandalay Shores is 26.1 miles, inconsistent with the distances cited elsewhere. The DEIS/R must provide an accurate and consistent disclosure of the distance from the FSRU site to sensitive visual receptors. G437-88

Impact AES-1

The DEIS/R acknowledges (p. 4.4-23) that activities associated with night lighting during construction "may create a moderate degree of visual sensitivity for occupants of coastal residences and view corridors and those on State Highway 1." No basis other than unsubstantiated opinion is stated for the conclusion that this activity would result in only a "moderate degree of visual sensitivity." The analysis of Impact AES-1 fails to apply any of the elements of the threshold of significance cited on p. 4.4-7 of the DEIS/R. The EIS/R must apply the appropriate thresholds of significance based on expert opinion or other substantial evidence. G437-89

When the relevant threshold of significance is applied, it is clear that night lighting during construction will result in a significant aesthetic impact. The night lighting of the proposed construction site would "degrade an existing viewshed or scenic vista." The night lighting of the proposed construction site within the context of a pristine ocean vista would certainly be significant, given the massive lit element within a darkened night view as well as the high degree

[39] Wignall, D. and M. Womertley. 2004. "Shipping Volumes, Routings and Associates Trends." British MaritimeTechnology Asia Pacific, Singapore. http://www.bmtasia.com.sg/. Presentation given at Shipping Noise and Marine Mammals, May 17, 2004. Arlington, Virginia, USA. Available at http://www.shippingnoiseandmarinemammals.com/NOAAMaterials.cfm.

G437-87
Section 4.3.4 addresses the effects of Project operations on marine traffic, and Section 4.20.3.3 addresses the cumulative impacts of increased regional marine traffic. The Independent Risk Assessment(Appendix C1) addresses the potential impacts of increased regional marine vessel traffic on public safety.

G437-88
Section 4.4.1.2 has been updated.

G437-89
Work and navigational lighting on board vessels used during construction of the offshore pipelines would be visible much of the time; however, this is a temporary condition not expected to last more than 1.5 to 2 months.